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SOUTH DAKOTA PUBLIC  
UTILITIES COMMISSION

**Before the Public Utilities Commission  
of The State of South Dakota**

**Testimony of  
Ben Grote**

*B. Grote*

**Concerning the proposed Keystone oil  
pipe line and the Environmental  
Impact Statement for the proposed  
Keystone pipeline.**

IN THE MATTER OF THE APPLICATION  
BY TRANSCANADA KEYSTONE PIPELINE,  
LP FOR A PERMIT UNDER THE SOUTH  
DAKOTA ENERGY CONVERSION AND  
TRANSMISSION FACILITIES ACT TO  
CONSTRUCT THE KEYSTONE PIPELINE  
PROJECT



**Submitted on October 31, 2007**

### **Burden of Proof**

Under South Dakota law, the applicant in this case, TransCanada, has the burden of proof as stated in SDCL 49;

SDCL 49-41B-22 Applicant's burden of proof. The applicant has the burden of proof to establish that:

- (1) The proposed facility will comply with all applicable laws and rules;
- (2) The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the sitting area;
- (3) The facility will not substantially impair the health, safety or welfare of the inhabitants; and
- (4) The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

I Ben Grote will Insert either (1),(2),(3),(4) or a combination of the numbered sections as stated in SDCL49 after some of but not all of stated facts concerns and or questions where I see relevance to issues where burden of proof needs to be established.

### Mutations

It should be proven that when a leak does occur, the chemicals that are released into the environment will not cause mutagenic effects to plant life (2), especially heritable mutations which would quickly spread beyond the original site where it first occurred. This threat is not specific to the land owners that the chemicals come in direct contact with. A genetic mutation can quickly reach far beyond the locality in which it first occurred through reproduction and is, as far as current science and technology stand, impossible to control beyond the second generation. If a leak of any size were to occur, the detection of any mutation would have to happen before reproduction for it to be stopped from spreading.

According to the Genetically Engineered Organisms Public Issues Education Projection, the USDA "APHIS has regulatory jurisdiction over the release of new GE plants and microorganisms into the environment (2)." Humans genetically engineer seeds and plants and these organisms are studied and approved before taken out of isolation from the lab and introduced to nature. The material contents of the proposed Keystone pipeline are not strictly raw material. It includes? (This information is not available in the EIS.)

Any mutagenic effect caused by these chemicals would not be a natural occurrence in nature and could pose threats of many sorts (2),(3),(4).

For the safety of people and the security of the environment in which they live, the EIS should include an in-depth study on the subject of mutations in life forms caused by the chemicals that will be used in the keystone pipeline (2),(3),(4).

The risks of an accidental human caused mutation having negative effects on the environment are more or less the same as a genetically engineered organism (depending on the specific risk.)

The International Society of Environmental Botanists Enviro news, Vo. 10 No.3-July 2004-Environmental Impact of Genetically Engineered Crops list the risks as

- Increased invasiveness (2),(3),(4).
- Development of new more virulent strains of viruses on transgenic virus resistant plants (2),(3),(4).
- Effect of toxic, transgenic products from insect and pathogen resistant plants on non-target organisms (2),(3),(4).
- Overcoming the resistance mechanism of the transgenic by insect pest leading to more virulent insect biotypes (2),(3),(4).
- Transfer of antibiotic resistance genes, used as selectable markers in the process of developing transgenics to other organisms (2),(3),(4).
- Safety of food items obtained from transgenic crops-allergic reactions (2),(3),(4).
- Gene flow to other crop cultivars, traditional varieties, land races, wild weedy

related species leading to the loss of biodiversity (2),(3),(4).

- Long term effects
- Non-foreseeable effects on ecosystems

"The possibility of the above mentioned risks cannot be ruled out on the basis of scientific knowledge" (not only of GE crops but also of Genetically Mutated life).

There is a possibility that a mutation could occur, such that, if engineered in a lab and analyzed by the USDA, would not be approved.

A mutation caused by the keystone pipeline could poses threats to, the altered organism, the entire species of altered organism, eco systems, farmers, organic farmers (2),(3),(4).

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#### The effects of Keystone pipe line on organic farmers

Organic farmers and consumers around the world have high standards in consumer goods and goods production. The demand for certified organic products is rising (2). See exhibit 1.

This rise is not simply a fad or pop culture. It is happening as people become more aware of their own health, their relationship to industry, their relationship to the land and eco friendly production. It is quite likely that this rise in awareness and a rise in demand and production will be a continuous escalating trend.

As an organic gardener and organic consumer, I believe I stand with the majority of

people who share this lifestyle, when I say; I want to know where what I consume comes from. Most of those in the organic industry cater to this desire by proudly sharing with their consumers in detail the entire production and distribution process from seed to store including the state of the land.

I don't know if anyone along the proposed pipeline path is farming organically, but I do know that they have the right to do so on their own land, the land they know and care for.

I don't believe the EIS has addressed the concerns of organic landowners and consumers. The EIS should answer the following questions, address the following concerns and state the following facts:

- Where under the law does the government have the right to repudiate a land owners right to produce organic foods (1)? If the answer to this question is that they don't have this right and that the USDA will certify crops as organic that are grown over this pipeline, then the following question must be answered.
- Where under the law does the government have the right to repudiate a farmer's right to fair competition in the marketplace (1)? Certainly most consumers of organic products would be disesteem by the fact that a certified organic product is grown over an oil pipeline. Public perception would devalue the farmer's product and discredit the USDA's certification system. There are other certification systems on which organic consumers can rely.
- If there happens to be a leak what about the neighboring farms? What about their right to farm organically (3),(4)?

- Would all land owners affected be compensated fairly for damages?
- Organic farms are governed by the federal Organic Foods Production Act and the National Organic Program (NOP) standards contained in federal regulations, C.F.R §205 et seq (1).
- The "MinnCan" was rerouted to avoid harming Organic farms.
- Ecology is integral part of all agriculture. Organic farmers pay close attention to soil composition and the ecology of the land to produce maximum yield, while conserving it for future generations.
- Even a 5 °F increase from normal soil temperature generated from the pipeline will change the soil composition (2),(4).
- Farmers will need to study changes in soil composition and treat the soil differently along the pipeline path to optimize agricultural production.
- I am concerned the farmers would not be compensated for the efforts required to study the changes in soil composition. I am concerned farmers would not be compensated for the extra labor involved in treating this land differently than it would be treated under normal conditions (2),(3),(4).
- I am concerned the pipe will break and destroy farms (2),(3),(4).

On a social economic level, just the potential of an oil leak would render the value of any land seen as potentially vulnerable, worthless to many, certainly not any more valuable to anyone (2). The influence of this social perception will drive the value of land down tremendously affecting not only the price of land the pipeline routes through but all land that is perceived to be in harms way. This includes property down stream, property over

the aquifer and property tapped into water systems that cross the Keystone pipelines path

### No drought prone soils?

It has been stated in the EIS under soils and sediments 3.2 pages 10 and 11 "although decreases in soil moisture content within 3 feet of the pipe center line may occur, no drought-prone soils have been identified along the proposed route." This is either a false statement or a deceptive statement. One way or the other it is an irrelevant statement.

Take a look at the drought US monitor Archives and it is obvious drought often occurs along the proposed pipeline path. Take SD, August 14, 2007 as an example. Much of the proposed pipeline path was in moderate to severe drought. See exhibit 2

Take a look one year back to July 25, 2006 in the drought monitor archives and again you will find drought. Scan up and down The U.S. along the pipeline path and you will find more droughts. See exhibit 3. Look through the archives, again, more droughts.

SD counties along the proposed pipeline path declared in 2006 for drought assistance were Clark, Beadle, Kingsbury, Miner, Hanson, Hutchinson which represent six of the 56 SD counties declared in state of drought. A drought declaration map can be found at <http://www.state.sd.us/applications/MV3/DroughtTaskForce/index.htm>. See exhibit 4. At the same web sight is a letter to the honorable Mike Johanns, Secretary of Agriculture signed by Governor M. Michael Rounds. The letter opens "Dear Secretary Johanns: The State of South Dakota is now in its seventh consecutive year of drought. So far in 2006, late spring killing frost, extreme heat, high winds, hail, insect damage, insufficient

subsoil moisture and significantly below normal precipitation have caused the same conditions that impacted the agricultural industry in portions of South Dakota in 2005 and previous years." See exhibit 5.

Note that in this letter, Rounds has indicated insufficient subsoil moisture. There is an inconsistency from Rounds statement to what the EIS states "no drought prone soils have been identified." If there is any truth to the EIS, it either lies in the word identified (in which case no drought study has been done), or in the definition of the word prone which depends on the period of time being observed, which is irrelevant anyways. Time and time again drought hits this land and that is what matters to farmers and affects the crops and all vegetation subject to it.

The EIS states that impacts to agricultural productivity will be addressed by the recommended agricultural impact evaluation and compensation plan. I expect my questions, concerns and statements will be addressed in-depth in this statement. I would like to point out that soil is part of a lot bigger picture than just agricultural and a much more extensive and complete study of it should be included not only in the Agricultural Impact Evaluation but in the EIS.

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**Effects of heat on soil, the validity of the analysis? And the importance of the  
reliability of the study!**

I question the validity of the analysis of the effects of pipeline operations on winter and

summer soil temperatures along the proposed pipeline route. The analysis must be reported in more detail than has been to have any meaning.

The methodology of the study should be transparent and the data produced should be stated in a scientific and discernable manner.

Data is stated as follows in the EIS “for the lower operating volume soil temperatures at 6 inches depth within 3 feet of the pipeline center line would be elevated by less than 5°F in early March.”

- From the given statement it is not perceptible whether the data was taken from the southern US or the northern US or somewhere in between.
- From the given statement, it is not perceptible whether the data was taken from a random day in March, the warmest day in the recorded history of March, the coldest day in the recorded history of March or the average temperature over any given time period in March.

Data produced by analysis on the hottest day in the history of March in the southern US as compared to data produced on the coldest recorded day in the history of March in the northern US would be radically different.

The data should include:

- Temperature of oil at specific bpd
- Thermal conductivity (R value) of the pipeline

- Normal unaffected soil temperature at specific depth
- Soil type
- Ground moisture content in normal unaffected ground
- Ground moisture content in affected ground
- Depth of pipeline
- Temperature of soil at various depths reported in context of all relevant data.

The methodology of the analysis should be reported in full disclosure so that the validity of the study can be discerned.

The importance of the integrity of this study is multifaceted.

- Soil temperature affects many biological and chemical processes.
- Soil temperature affects the decomposition of organic matter (2).
- Even a small change in soil temperature will change the eco system surrounding the pipeline.
- A change in temperature will force some micro-organisms to migrate away from the heated soil changing the dynamics of the ecology of the area including subsurface and surface life.
- These changes will be suitable for organisms that would otherwise not survive in the area. Over time, non-native organisms will be introduced to the area some of which may be invasive (2), (4). Once established, these organisms may adapt to migrate away from the pipeline because of limited affected space (2), (4).
- The likelihood of new life being introduced to the area is not limited to micro

organisms but includes bacteria, fungi, worms, insects, plants, etc., any of which could pose a threat to the existing ecology and or agriculture (2), (3), (4).

If the soil temperature is elevated even to a small degree, this process is inevitable to some extent and to a larger extent the higher the elevation in soil temperature (2), (3), (4). The better insulated the pipeline; the less ecology would be changed from its natural state. Evidence of effects of relatively small changes in soil temperature on soil decomposition and composition are seen in the following excerpt of an article published in The European Journal of Soil Biology Volume 42, issue 2, April-June 2006 pages 74-81. (Many other studies can be cited)

The effects of soil temperatures of 5, 10 and 15 °C on the decomposition of Scots pine (*Pinus sylvestris* L.) needles were assessed in a 1-year (360 days) growth chamber experiment. Intact peat cores from two climatically different peatland sites (southern and northern Finland) were used as the incubation environments. Needles were incubated in litter bags beneath the living moss layer, and mass loss and nitrogen (N) concentration were determined at 60-day intervals. The rate of mass loss from the needles over time was clearly lower in the 5 °C treatment than at the higher temperatures. Mass loss was strongly related to the accumulated soil temperature sum. In temperatures higher than 5 °C, mass losses were higher in the northern peat. Also, the limit value of decomposition (asymptotic maximum mass loss) was slightly higher in the northern peat (92%), than in the southern peat (87%). The N concentration increased up to a mass loss of 50–60%, whereupon it decreased, while the amount of N (as a percentage of the original amount) remained unchanged until a mass loss of 50–60%, whereupon it decreased linearly. It

seems that increasing soil temperatures may result in slightly higher rates of needle litter mass loss and consequent N release in northern peat than in southern peat.

From an engineering stand point, I speculate that it is necessary for some heat to be released so that the oil in the pipe does not overheat. It would please many people to see the heat recaptured and converted into energy to power the pump stations or returned to the electrical grid. At very least heat loss should be controlled and not released into the soil.

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**We should learn from History! We should be building safer not cheaper!**

The following is a quote from the book *Cradle to Cradle* by William McDonough and Michael Braungart: "The GDP takes only one measure of progress into account: activity. Economic activity. But what sensible person would call the effect of an oil spill progress? By some accounts, the *Valdez* accident led to the death of more wildlife than any other human-engineered environmental disaster in U.S. history. According to a 1999 government report, only two of the twenty-three animal species affected by the spill recovered. Its impact on fish and wildlife continues today with tumors, genetic damage, and other effect. The spill led to losses of cultural wealth, including five state parks, four state critical-habitat areas, and a state game sanctuary. Important habitats for fish spawning and rearing were damaged, which may have led to the 1993 decimation of the Prince William Sound's Pacific herring population (perhaps because of a viral infection due to oil exposure). The spill took a significant toll on fishermen's income, not to

mention the less measurable effects on morale and emotional health.

The GDP as a measure of progress emerged during an era when natural resources still seemed unlimited and “quality of life” meant high economic standards of living. But if prosperity is judged only by increased economic activity, then car accident, hospital visits, illnesses (such as cancer), and toxic spills are all signs of prosperity. Loss of resources, cultural depletion, negative social and environmental effects, reduction of quality of life—these ills can all be taking place, an entire region can be in decline, yet they are negated by a simplistic economic figure that says economic life is good.

Countries all over the world are trying to boost their level of economic activity so they, too, can grab a share of the “progress” that measurements like the GDP propound. But in the race for economic progress, social activity, ecological impact, cultural activity, and long-term effect can be overlooked.”

I have driven nearly every road directly parallel and adjacent to the pipeline path photo documenting the road conditions, the landscapes and the wildlife through out Day and Marshall Counties. I have seen where the pipeline would run closely parallel to irrigation ditches and creeks rushing with water. I have seen where the pipeline would run under ponds and sloughs and near a pristine lake. I have seen where the pipeline would cut through untouched grasslands and glacial hills and valleys. I have seen where the pipeline would cut through family's backyards and farmer's hard worked fields. I can't help but be concerned that these things are being ignored. Reviewing the EIS has only magnified my concerns.

I am all for progress! I realize our need for energy is real but there are other things concerning our well-being at stake. This is why I believe the EIS should be left open for more public and professional input until it is a fair and responsible document which takes the cumulative concerns and knowledge of the people it will affect into serious consideration.

Thank you.

A handwritten signature in black ink, appearing to read "B. C. 2" with a stylized flourish at the end.



## Data Sets

### Organic Production

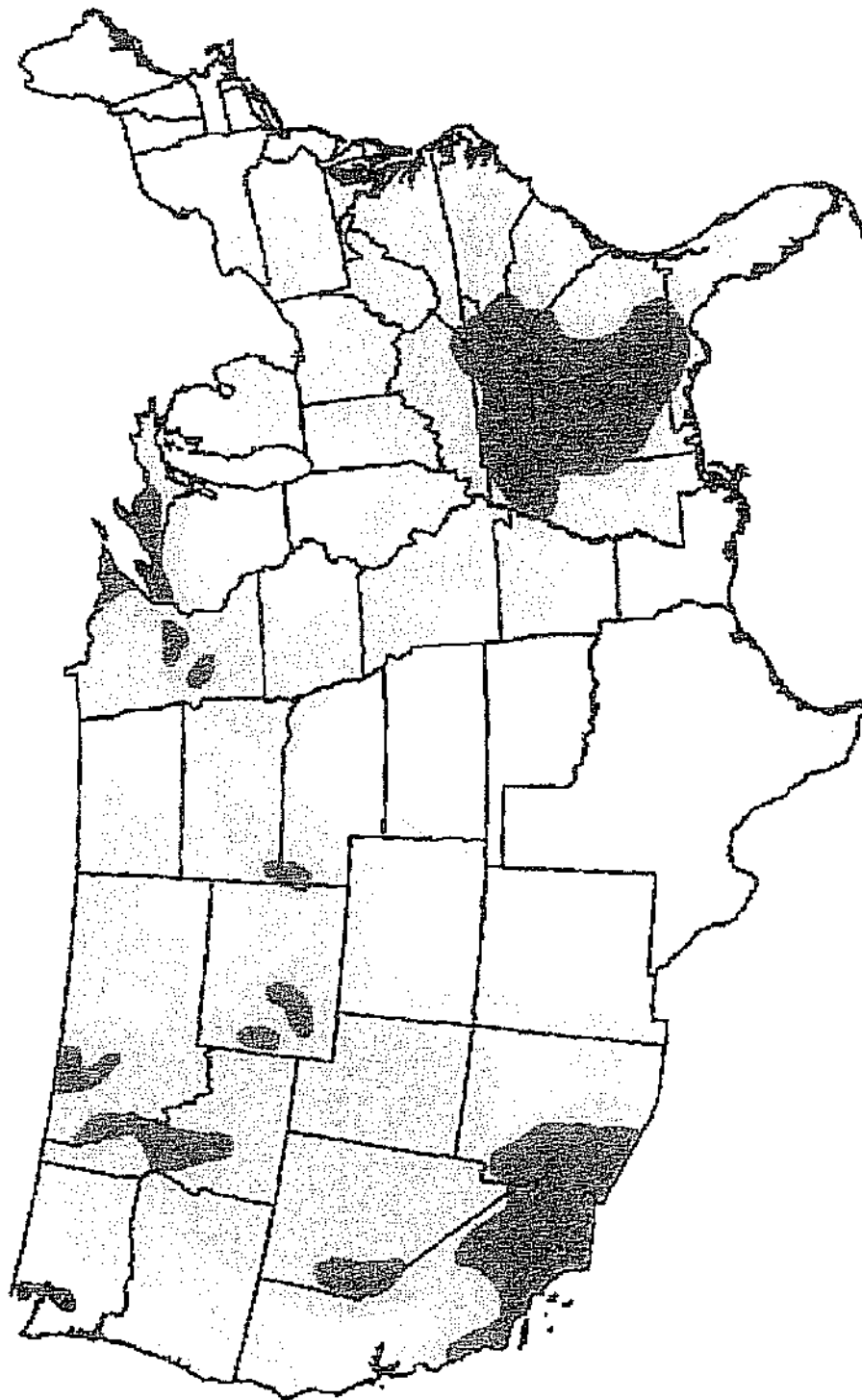
#### Overview

Organic farming has been one of the fastest growing segments of U.S. agriculture for over a decade. The U.S. had under a million acres of certified organic farmland when Congress passed the Organic Foods Production Act of 1990. By the time USDA implemented national organic standards in 2002, certified organic farmland had doubled, and doubled again between 2002 and 2005. Organic livestock sectors have grown even faster. ERS collected data from USDA-accredited State and private certification groups to calculate the extent of certified organic farmland acreage and livestock in the United States. These are presented in 13 tables showing the change in U.S. organic acreage and livestock numbers from 1992 to 2005. Data for 1997 and 2000-2005 are presented by State and commodity. Data for 2000-2005 include the number of certified operations, by State.

Go to the data tables, or read more about organic production below.

In 2005, for the first time, all 50 States in the U.S. had some certified organic farmland. U.S. producers dedicated over 4.0 million acres of farmland—1.7 million acres of cropland and 2.3 million acres of rangeland and pasture—to organic production systems in 2005. California remains the leading State in certified organic cropland, with over 220,000 acres, mostly for fruit and vegetable production. Other top states for certified organic cropland include North Dakota, Montana, Minnesota, Wisconsin, Texas, and Idaho. Over 40 States also had some certified organic rangeland and pasture in 2005, although only 4 states—Alaska, Texas, California and Montana—had more than 100,000 acres. USDA lifted restrictions on organic meat labeling in the late 1990s, and the organic poultry and beef sectors are now expanding rapidly.

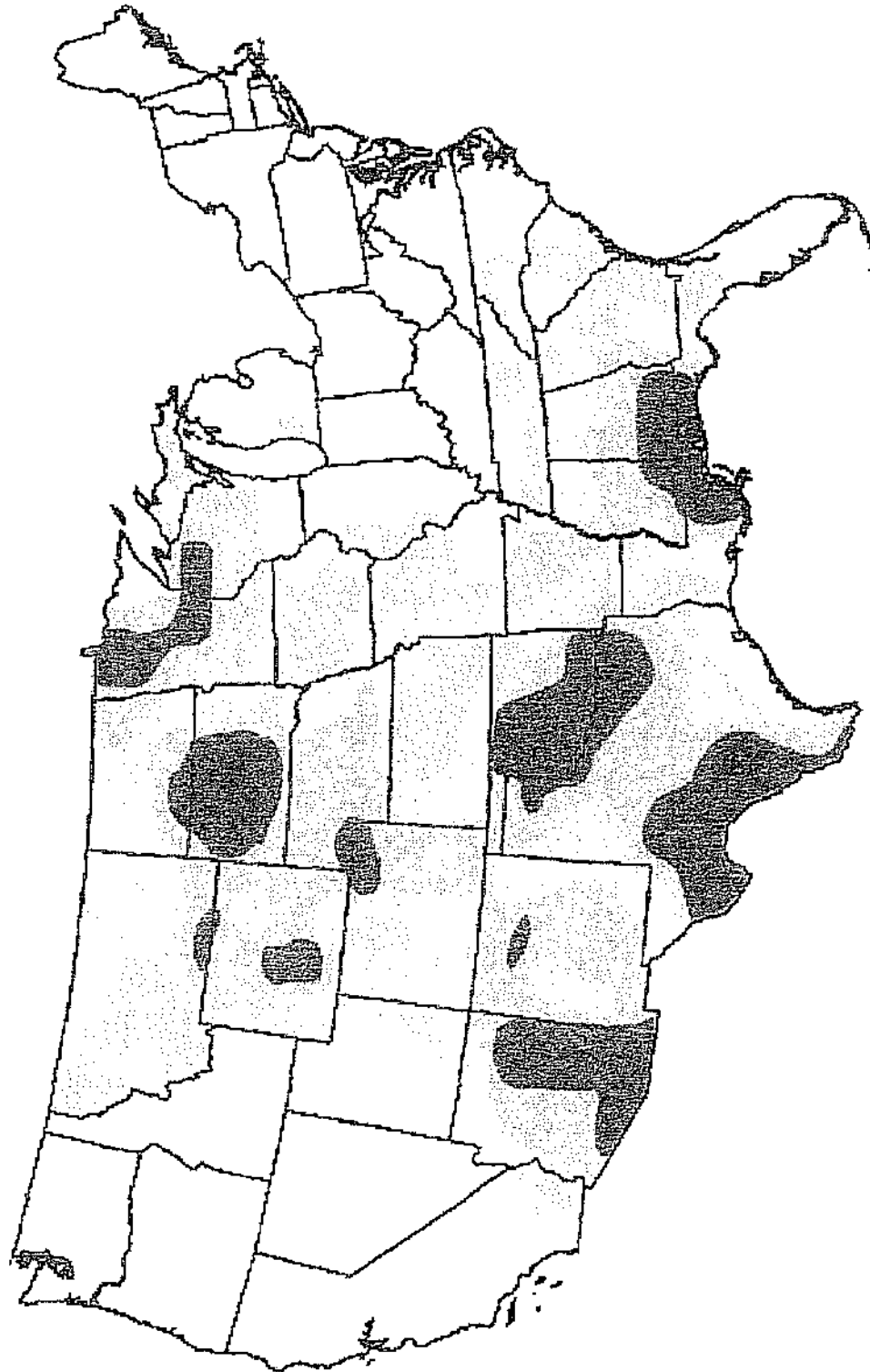
Top 10 States, 2005					
Number of certified operations		Cropland acres		Pasture acres	
California	1,916	California	223,263	Alaska	1,460,000
Wisconsin	580	North Dakota	143,322	Texas	241,353
Washington	527	Montana	126,450	California	137,004
Iowa	453	Minnesota	116,813	Montana	103,433
Minnesota	433	Wisconsin	91,030	Wyoming	66,290
New York	427	Texas	87,124	Colorado	60,766
Vermont	366	Idaho	81,220	North Dakota	37,811
Oregon	317	Kansas	80,180	Wisconsin	31,308
Pennsylvania	308	Nebraska	77,820	Idaho	19,412
Maine	288	Iowa	64,158	Nebraska	17,655
Data for all States and previous years are available here.					



D0 Abnormally Dry   D1 Drought - Moderate   D2 Drought - Severe   D3 Drought - Extreme   D4 Drought - Exceptional

Exhibit

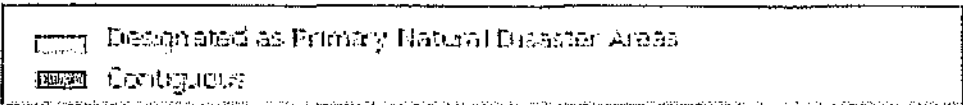
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D0 Abnormally Dry D1 Drought - Moderate D2 Drought - Severe D3 Drought - Extreme D4 Drought - Exceptional

Exhibit

3





STATE OF SOUTH DAKOTA  
M. MICHAEL ROUNDS, GOVERNOR

June 30, 2006

The Honorable Mike Johanns  
Secretary of Agriculture  
14<sup>th</sup> Street and Independence Avenue S.W., Room 200A  
Washington, DC 20250

Dear Secretary Johanns:

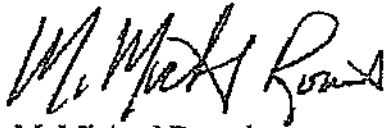
The state of South Dakota is now in its seventh consecutive year of drought. So far in 2006, late spring killing frost, extreme heat, high winds, hail, insect damage, insufficient subsoil moisture and significantly below normal precipitation have caused the same conditions that impacted the agricultural industry in portions of South Dakota in 2005 and in previous years. This drought has left dams and dugouts dry and aquifers low, which has the potential to produce high selenium concentration threatening the health of livestock. Counties have reported losses of cash crops such as alfalfa, barley, corn, hay, oats, soybeans, sunflowers and wheat, as well as shortages of grass and forage for livestock. All of these conditions have forced farmers and ranchers to begin to reduce their cattle and sheep herds. The conditions continue to bring economic hardships not only to the affected farmers and ranchers, but also to those businesses that depend on farmers and ranchers for their livelihood.

I have received County Disaster Resolutions and United States Department of Agriculture Flash Situation Reports noting the conditions listed above from the counties of Brule, Buffalo, Campbell, Corson, Custer, Dewey, Edmunds, Fall River, Faulk, Hughes, Hyde, Jackson, Jerauld, Jones, Lyman, Meade, Pennington, Perkins, Potter, Stanley, Sully, Walworth and Ziebach. The Flash Situation Reports reflect alfalfa, barley, corn, hay, oats, soybeans, sunflowers and wheat production, rangeland and pastureland losses varying from 30 to 100 percent.

I have also received a County Disaster Resolution and United States Department of Agriculture Flash Situation Report from Turner County as a result of high winds, heavy rain and hail that occurred on June 16, 2006. Turner County reports losses ranging from 50 to 90 percent to cash crops such as corn, soybeans, winter wheat and oats.

I am concerned that the agricultural producers in these counties may not be able to continue their family farming and ranching operations next year if assistance is not provided by the United States Department of Agriculture. Therefore, I am requesting that you declare the counties listed above as Secretarial natural disaster areas and make available to these producers all necessary and available assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Michael Rounds". The signature is stylized with a large, looped "M" and a cursive "Rounds".

M. Michael Rounds

MMR:nkn

cc: Senator Tim Johnson  
Senator John Thune  
Representative Stephanie Herseth

Enclosures

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Current employee of Web Water

Past employment: Granary Rural Cultural Center Nonprofit, Artistic Director  
Grote Roofing Co., Inc., Sheet metal and roofing work

Education: High School graduate of Roncalli High School, Aberdeen, SD  
Northern State University-studies in fine arts